

CLAIMS

What is claimed is:

1. An integrated control and power unit for use aboard a bicycle comprising a housing for an electronic control unit and a holder container for one or more batteries for powering electrical devices fitted aboard the bicycle,

wherein the housing of the control unit and the battery holder container are provided with quick coupling means that, when coupled, also provide the electrical connection between the batteries and the control unit.

2. The unit of claim 1 wherein the quick coupling means comprise a circular seat formed in the body of the housing of the control unit and a cylindrical end portion of the battery holder, which can be received within the seat.

3. The unit of claim 2 wherein the cylindrical end portion of the battery holder has one or more electrical contacts on an external surface thereof leading to the batteries that is suitable for engaging corresponding contacts in the seat, once the coupled condition is obtained.

4. The unit of claim 3 wherein the electrical contacts on the external surface of the cylindrical end portion of the battery holder container comprise a ring of conductive material surrounding the cylindrical end portion.

5. The unit of claim 1 wherein the battery holder container has an axis of rotation and the electrical connection between the batteries and the control unit, when coupled, is maintained despite the orientation of the battery holder container about the axis.

6. The unit of claim 1 wherein the housing is configured to be fixed to the frame of the bicycle crank axle.

7. The unit of claim 6 wherein the housing of the control unit has an upper surface including a cradle-like portion adapted to engage the lower surface of the frame of the crank axle.

8. The unit of claim 7 wherein the housing has at least one hole for engagement of a screw for fixing the housing of the unit to the frame of the crank axle.

9. The unit of claim 8 wherein the housing of the unit has a substantially flattened shape, with a planar lower surface and an upper surface including the cradle-like portion, the upper and lower surfaces having facing holes for engagement of a screw for fixing the housing of the unit to the frame of the crank axle.

10. The unit of claim 9 wherein the housing of the unit is constituted by a body of plastic material comprising an upper half-shell and a lower half-shell fixed to each other.

11. The unit of claim 7 wherein the unit housing includes at least one annular ear which can be secured at one end of the frame of the crank axle.

12. The unit of claim 11 wherein the at least one annular ear is secured against a respective end of the frame of the crank axle by a enlarged head of a threaded bush which is screwed within the respective end of the frame of the crank axle and rotatably supports the crank axle, the at least one annular ear being mounted on the respective threaded bush, between the enlarged head of the bush and the respective end of the housing of the crank axle.

13. The unit of claim 11 wherein the housing of the unit has a substantially flattened shape, with a planar lower surface and an upper surface including the cradle-like portion.

14. An integrated control and power unit for use aboard a bicycle, comprising:

a housing that receives an electronic control unit for controlling an electrical

device on a bicycle, having an externally accessible electrical connector that is operatively connected to the control unit; and

a battery holder for providing electrical power, having an electrical connector that mates with the externally accessible electrical connector;

wherein the housing of the control unit and the battery holder are quickly coupled to provide an electrical connection between the battery holder and the control unit.

15. The unit of claim 14 wherein the battery holder and the control unit are quickly coupled using a circular seat formed in the housing of the control unit and a cylindrical end portion of the battery holder, which can be received within the seat.

16. The unit of claim 15 wherein the cylindrical end portion of the battery holder container has one or more electrical contacts on the external surface leading to the batteries and suitable for engaging corresponding contacts in the seat, once the coupled condition is obtained.

17. The unit of claim 16 wherein the electrical contacts on the external surface of the cylindrical end portion of the battery holder container comprise a ring of conductive material surrounding the cylindrical portion.

18. The unit of claim 14 wherein the battery holder has an axis of rotation and the electrical connection between the battery holder and the control unit, when coupled, is maintained despite the orientation of the battery holder container about the axis.

19. The unit of claim 14 wherein the housing is adapted to be fixed to the frame of the bicycle crank axle.

20. The unit of claim 19 wherein the housing of the control unit has an

upper surface including a cradle-like portion adapted to engage the lower surface of the housing of the crank axle.

21. The unit of claim 20 wherein the housing has at least one hole for engagement of a screw for fixing the housing of the unit to the frame of the crank axle.

22. The unit of claim 21 wherein the housing of the unit has a substantially flattened shape, with a planar lower surface and an upper surface including the cradle-like portion, the upper and lower surfaces having facing holes for engagement of a screw for fixing the housing of the unit to the frame of the crank axle.

23. The unit of claim 22 wherein the housing of the unit is constituted by a body of plastic material comprising an upper half-shell and a lower half-shell fixed to each other.

24. The unit of claim 20 wherein the unit housing includes at least one annular ear which can be secured at one end of the frame of the crank axle.

25. The unit of claim 24 wherein the at least one annular ear is secured against a respective end of the frame of the crank axle by an enlarged head of a threaded bush which is screwed within the respective end of the frame of the crank axle and rotatably supports the crank axle, the at least one annular ear being mounted on the respective threaded bush, between the enlarged head of the bush and the respective end of the frame of the crank axle.

26. The unit of claim 24 wherein the housing of the unit has a substantially flattened shape, with a planar lower surface and an upper surface including the cradle-like portion.

27. An integrated control and power unit for use aboard a bicycle, the unit comprising:

a housing that receives an electronic controller for controlling an electrical device on a bicycle, and has an externally accessible electrical connector of a first configuration that is operatively connected to the control unit; and

an electrical power pack having an electrical connector of a second configuration that mates with the first configuration of the externally accessible electrical connector;

wherein the first and second configurations are quickly coupled to provide an electrical connection between the power pack and the controller.

28. The unit of claim 27 wherein the quick coupling between the power pack and the housing comprises a circular seat formed in the body of the housing and a cylindrical end portion of the power pack that can be received within this seat.

29. The unit of claim 28 wherein the cylindrical end portion of the power pack has one or more electrical contacts on the external surface leading to batteries that are suitable for engaging corresponding contacts in the seat once the coupled condition is obtained.

30. The unit of claim 29 wherein the electrical contacts comprise a ring of conductive material surrounding the cylindrical end portion.

31. The unit of claim 27 wherein the power pack has an axis of rotation and the electrical connection between the power pack and the controller, when coupled, is maintained despite the orientation of the power pack about the axis.

32. The unit of claim 27 wherein the housing is configured to be fixed to the frame of the bicycle crank axle.

33. The unit of claim 32 wherein the housing has an upper surface including a cradle-like portion adapted to engage the lower surface of the frame of the crank axle.

34. The unit of claim 33 wherein the housing has at least one hole (15) for engagement of a screw for fixing the housing to the frame (6) of the crank axle.

35. The unit of claim 34 wherein the housing has a substantially flattened shape, with a planar lower surface and an upper surface including the cradle-like portion, the upper and lower surfaces having facing holes for engagement of a screw for fixing the housing of the unit to the frame of the crank axle.

36. The unit of claim 35 wherein the housing is constituted by a body of plastic material comprising an upper half-shell and a lower half-shell fixed to each other.

37. The unit of claim 33 wherein the housing includes at least one annular ear that can be secured at one end of the frame of the crank axle.

38. The unit of claim 37 wherein the at least one annular ear is secured against a respective end of the frame of the crank axle by a enlarged head of a threaded bush which is screwed within the respective end of the frame of the crank axle and rotatably supports the crank axle, the at least one annular ear being mounted on the respective threaded bush, between the enlarged head of the bush and the respective end of the housing.

39. The unit of claim 37 wherein the housing has a substantially flattened shape, with a planar lower surface and an upper surface including the cradle-like portion.